

Appl. No.: 10/661,349

Amdt. dated 05/20/2005

Reply to Office action of March 7, 2005

REMARKS/ARGUMENTS

Reexamination and reconsideration of this Application, withdrawal of the rejections, and formal notification of the allowability of all claims as now presented are earnestly solicited in light of the amendments and remarks herein. Claims 18-45 are pending in the application.

Claims 18-42 and 44-45 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of U.S. Patent No. 4,157,959 to Wen *et al.* and U.S. Patent No. 5,248,415 to Masuda *et al.* Claim 43 stands rejected under 35 U.S.C. §103(a) as being unpatentable over the above-described Wen and Masuda references and in further view of U.S. Patent No. 5,362,384 to Whetsel. The Examiner relies upon the Wen reference as disclosing an upflow filter having an actuating means for adjusting the compression on a filtration media from an expanded condition during cleaning to a variably compressed condition during filtration, whereby a plurality of layers of filtration media are established, the layers being progressively more compressed in the flow direction. The Examiner relies upon the Masuda reference as disclosing a compressible filtration media and concludes that it would have been obvious to one of ordinary skill in the art to substitute the compressible media of Masuda for the filtration media of Wen. In this regard, the Examiner alleges that the filtration media of Masuda is "capable of filtering particulate contaminants from a fluid in substantially the same manner as filtration media of the primary reference." The Examiner relies upon the Whetsel reference as disclosing a turbidity monitor and alleges that it would have been obvious to incorporate the turbidity monitor of Whetsel in the modified filtration system allegedly taught by the combination of Wen and Masuda. Applicant respectfully traverses this rejection.

Applicant respectfully submits that one of ordinary skill in the art would have no motivation to combine the compressible media of Masuda with the semi-fluidized filtration system described by Wen. In fact, the clear teachings of the cited art would dissuade one of ordinary skill in the art from attempting such a combination. The Wen reference is directed to a method of filtering wastewater using a granular filter bed that can be progressively fluidized during filtration such that a "cake" of particulates will slowly rise from the bottom of the granular bed to the top of the granular bed as the filtration bed is fluidized. The Wen reference specifically states that the filter medium of the bed "has been selected for its capacity to filter out

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the particulate material from the fluid, the particulates [being] unable to penetrate the bed to any great extent before being stopped by the bed granules" (column 4, lines 29-33). The specific examples of granular filter media provided in Wen are sand and glass beads (column 6, lines 30-32). The Wen patent also notes that the system described therein requires that the granular filter media have a relatively wide range between the minimum and maximum fluidization velocities so that a fluidization velocity within the range can be selected in order to produce the semi-fluidized state.

One of ordinary skill in the art would view the Wen reference as requiring conventional solid granular filtration media of the type mentioned in the background section of Applicant's invention. The only examples of granular media described in the Wen reference are sand and glass beads, which are relatively dense, solid materials. One of ordinary skill in the art would not view the fibrous lump media of Masuda as suitable for use in the system described in Wen. There is certainly no basis for concluding that one of ordinary skill in the art would view the fibrous lump media of Masuda as interchangeable with the granular media described in Wen. For example, one of ordinary skill in the art would not consider the relatively less dense fibrous lumps of Masuda as suitable for providing the relatively wide range between minimum and maximum fluidization velocities that the Wen reference suggests. Both Applicant's specification (bottom of page 11) and the Masuda reference (column 3, lines 24-25) note that the fibrous media has a specific gravity very close to water. In contrast, the granular media exemplified in Wen would be expected to have a specific gravity that is at least two to three times the specific gravity of water.

Further, the Masuda reference itself teaches that the fibrous lump media described therein filters particulate matter in a manner that is inconsistent with the express requirements of Wen. Specifically, the Masuda reference teaches that, as water is filtered through the dense and uniform layer of fibrous lumps, "fine solid materials in the upward flow progressively adhere to the filter layer 6 from the lower portion to the upper portion thereof in that order" (column 4, lines 52-55). Thus, the filtering method associated with the fibrous lump media of Masuda is in stark contrast to the filtration methodology disclosed in Wen. The Wen reference requires that the filter media be selected so that particulates will be unable to penetrate the bed to any great

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extent so that a "cake" of fines will form in the lower portion of the bed. The Masuda reference clearly teaches that the fibrous media described therein allows fine solid materials to progressively adhere from the lower portion to the upper portion thereof rather than form a cake of fines at the lower portion of the bed. Thus, contrary to assertions made by the Examiner, there is no support for the conclusion that the filter media of Masuda would be expected to filter particulates "in the same manner" as the granular media of Wen. In fact, the two references teach filtering characteristics and filter media properties that are distinct and irreconcilable.

In addition, the Masuda reference actually teaches away from the use of the fibrous lump media in a fluidized or semi-fluidized bed of the type suggested by Wen. In the background section of the Masuda reference, a prior filtration system using fibrous lumps is described wherein the fibrous lumps are initially fluidized against an upper perforated panel. The Masuda reference pointedly describes several problems with such a system. For instance, Masuda notes that as fine solid materials adhere to the fibrous lumps, their apparent specific gravity is increased and the lumps either float or fall below the fluidized fibrous lump layer. This can cause the fine solid materials embedded in the floating or falling fibrous lumps to become dislodged and potentially pass completely through the filter layer. See column 1, lines 15-61 and Fig. 14. The Masuda reference teaches that, in order to overcome the deficiencies of the prior art system, the fibrous lump media should be maintained in a dense and uniform layer. If a dense and uniform layer is not maintained, the Masuda reference suggests that filtration efficiency deteriorates due to air gaps between the fibrous lumps (column 5, lines 16-24). The Masuda reference specifically describes a filtration system involving fluidization of the fibrous lump media and teaches away from such a system by suggesting that filtration efficiency is inferior in such a system. The Masuda reference expressly teaches that air gaps within the fibrous lump layer should be avoided or minimized by maintaining the lumps in a dense and uniform layer by compression. Based on these teachings, it is clear that one of ordinary skill in the art would view the fibrous lump media of Masuda as incompatible with the semi-fluidized bed system of Wen, particularly in light of the express teachings of Masuda that fluidization of the fibrous lump media (as opposed to compression into a fixed bed) is undesirable. The semi-fluidized filtration

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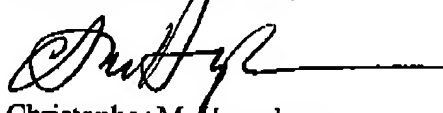
approach described in Wen would obviously result in extensive air gaps between the fibrous lumps taught by Masuda, which violates the express admonition in Masuda to avoid such gaps.

For the reasons outlined above, Applicant respectfully requests reconsideration and withdrawal of all rejections relying on a combination of Wen and Masuda.

It is believed that all pending claims are now in condition for immediate allowance. It is requested that the Examiner telephone the undersigned should the Examiner have any comments or suggestions in order to expedite examination of this case.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

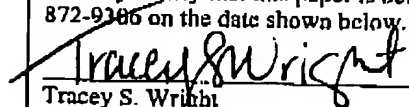


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5/20/05
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